L7 ANSWER 1 OF 9 MEDLINE DUPLICATE 1
AN 1999144109 MEDLINE
DN 99144109
TI Targeted delivery of **multivalent phage display** vectors into mammalian cells [published erratum appears in Biochim Biophys Acta 1999 Sep 21;1451(2-3):364].
AU Ivanenkov V V; Felici F; Menon A G
CS Department of Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati, College of Medicine 45267, USA.
SO BIOCHIMICA ET BIOPHYSICA ACTA, (1999 Jan 11) 1448 (3) 463-72. Journal code: A0W. ISSN: 0006-3002.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Cancer Journals; Priority Journals
EM 199905
AB Novel peptide motives targeting endocytosing receptors were isolated from **phage display libraries** of random peptides by recovering internalized phage from mammalian cells. The peptide-presenting phage selected by internalization in HEp-2 and ECV304 human cells were taken up 1000- to 100,000-fold more efficiently than their parent **libraries**, and from 10 to 100 times faster than phage particles displaying integrin-binding peptides. A high degree of selectivity of phage uptake was observed in these cells: phage selected in ECV304 cells were internalized approximately 100-fold more efficiently in ECV304 cells than in HEp-2 cells. Likewise, phage selected in HEp-2 cells were subsequently taken up approximately 40-fold more efficiently by HEp-2 cells than by ECV304 cells. In multiple independent trials using a cyclic peptide **library**, an identical peptide sequence displayed on phage was internalized by and recovered from ECV304 cells. These findings indicate that the internalization process is highly selective, and is capable of capturing a specific peptide from 2 x 10(7) peptide variants. Immunofluorescence microscopy showed juxtanuclear localization of internalized phage. These results demonstrate the feasibility of using **multivalent phage-display libraries** to identify new targeting ligands for the intracellular delivery of macromolecules.
CT Check Tags: Human; Support, Non-U.S. Gov't; Support, U.S. Gov't, P.H.S.
Amino Acid Sequence
Biological Transport, Active
Capsid: GE, genetics
Cell Line
*Coliphages: GE, genetics
Endocytosis
Escherichia coli: VI, virology
*Genetic Vectors: AD, administration & dosage
*Genetic Vectors: PK, pharmacokinetics
Microscopy, Fluorescence
Molecular Sequence Data
Peptide Library
Recombinant Proteins: GE, genetics
Viral Proteins: GE, genetics
CN 0 (pVIII protein); 0 (Capsid); 0 (Genetic Vectors); 0 (Peptide **Library**); 0 (Recombinant Proteins); 0 (Viral Proteins)

L7 ANSWER 2 OF 9 SCISEARCH COPYRIGHT 2000 ISI (R)

AN 1999:739189 SCISEARCH
GA The Genuine Article (R) Number: 239FZ
TI Targeted delivery of **multivalent phage display** vectors into mammalian cells (vol 1448, pg 463, 1999)
AU Ivanenkov V V; Felici F; Menon A G (Reprint)
CS UNIV CINCINNATI, COLL MED, DEPT MOL GENET BIOCHEM & MICROBIOL, CINCINNATI, OH 45267 (Reprint); UNIV CINCINNATI, COLL MED, DEPT MOL GENET BIOCHEM & MICROBIOL, CINCINNATI, OH 45267; IRCCS, CTR RIC FARMACOL, KENTON LABS, I-00179 ROME, ITALY
CYA USA; ITALY
SO BIOCHIMICA ET BIOPHYSICA ACTA-MOLECULAR CELL RESEARCH, (21 SEP 1999) Vol. 1451, No. 2-3, pp. 364-364.
Publisher: ELSEVIER SCIENCE BV, PO BOX 211, 1000 AE AMSTERDAM, NETHERLANDS.
ISSN: 0167-4889.
DT Errata; Journal
FS LIFE
LA English
REC Reference Count: 1
CC BIOCHEMISTRY & MOLECULAR BIOLOGY; BIOPHYSICS
RE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)
IVANENKOV V V	1999	1448	463	BBA-MOL CELL RES

L7 ANSWER 3 OF 9 EMBASE COPYRIGHT 2000 ELSEVIER SCI. B.V.
AN 1999384907 EMBASE
TI Erratum: Targeted delivery of **multivalent phage display** vectors into mammalian cells (Biochimica Biophysica Acta Molecular Cell Research (1999) 1448 (463-472) PII: S0167488998001633).
AU Ivanenkov V.V.; Felici F.; Menon A.G.
CS A.G. Menon, Department of Molecular Genetics, University of Cincinnati, College of Medicine, Cincinnati, OH 45267, United States. anil.menon@uc.edu
SO Biochimica et Biophysica Acta - Molecular Cell Research, (1999) 1451/2-3 (364).
ISSN: 0167-4889 CODEN: BAMRDP
CY Netherlands
DT Journal; Errata
FS 029 Clinical Biochemistry
LA English
CT Medical Descriptors:
*error
erratum
priority journal

L7 ANSWER 4 OF 9 MEDLINE DUPLICATE 2
AN 1999002881 MEDLINE
DN 99002881
TI The maltose-binding protein as a scaffold for monovalent display of peptides derived from phage **libraries** [published erratum appears in Anal Biochem 1999 Jan 15;266(2):240].
AU Zwick M B; Bonnycastle L L; Noren K A; Venturini S; Leong E; Barbas C F 3rd; Noren C J; Scott J K
CS Biochemistry Program, Department of Biological Sciences, Institute of Molecular Biology and Biochemistry, Simon Fraser University, 8888 University Drive, Burnaby, British Columbia, V5A 1S6, Canada.
NC AI 37470 (NIAID)
SO ANALYTICAL BIOCHEMISTRY, (1998 Nov 1) 264 (1) 87-97.
Journal code: 4NK. ISSN: 0003-2697.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English

FS Priority Journals
OS GENBANK-AF031088; GENBANK-AF031813
EM 199902
AB Random peptide **libraries** are displayed on filamentous bacteriophage as fusions to either the minor coat protein, pIII, or the major coat protein, pVIII. We have devised a means of isolating the peptide displayed on a phage clone by transferring it to the N-terminus of the maltose-binding protein (MBP) of Escherichia coli encoded by malE. Transfer of a peptide sequence to monomeric MBP eliminates phage-encoded amino acids downstream of the insert peptide as well as avidity effects caused by **multivalent** display on **phage**. Peptide:MBP fusions are also easily affinity purified on amylose columns. The pMal-p2 vector was engineered to accept phage DNA encoding pIII- and pVIII-displayed peptides fused to their respective leader sequences. Both types of leader sequence were shown to target the peptide:MBP fusions to the periplasm of E. coli. A streamlined procedure for transferring peptides to MBP was applied to clones that had been isolated from a panel of pVIII-displayed peptide **libraries** by screening with an HIV-1-specific monoclonal antibody (Ab). By enzyme-linked immunosorbent assay, the Ab bound each of the peptide:MBP fusions and required the presence of a disulfide bridge within each peptide. Some of the peptide:MBP fusions were also analyzed using surface plasmon resonance. Thus, our study shows the value of malE fusion vectors in characterizing phage-displayed peptides. Copyright 1998 Academic Press.
CT Check Tags: Human; Support, Non-U.S. Gov't; Support, U.S. Gov't, P.H.S.
Amino Acid Sequence
Bacteriophages: GE, genetics
Base Sequence
*Carrier Proteins: GE, genetics
Carrier Proteins: ME, metabolism
Carrier Proteins: SE, secretion
Cloning, Molecular
DNA, Recombinant
Escherichia coli
Genetic Vectors
HIV Antibodies: IM, immunology
HIV-1: IM, immunology
Molecular Sequence Data
***Peptide Library**
Polymerase Chain Reaction
Protein Processing, Post-Translational
Recombinant Fusion Proteins: GE, genetics
Signal Peptides: GE, genetics
Signal Peptides: ME, metabolism
CN 0 (maltose-binding protein); 0 (Carrier Proteins); 0 (DNA, Recombinant); 0 (Genetic Vectors); 0 (HIV Antibodies); 0 (Peptide **Library**); 0 (Recombinant Fusion Proteins); 0 (Signal Peptides)

L7 ANSWER 5 OF 9 MEDLINE DUPLICATE 3
AN 1999053659 MEDLINE
DN 99053659
TI The role of valency in the selection of anti-carbohydrate single-chain Fvs from **phage display libraries**.
AU MacKenzie R; To R
CS Institute for Biological Sciences, National Research Council Canada, Ottawa, Ontario.. roger.mackenzie@nrc.ca
SO JOURNAL OF IMMUNOLOGICAL METHODS, (1998 Nov 1) 220 (1-2) 39-49. Journal code: IFE. ISSN: 0022-1759.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals

EM 199902
EW 19990204
AB Several strategies were investigated for **phage display** of anti-carbohydrate single-chain Fvs (scFvs) using the anti-Salmonella Se155-4 scFv as a model system. All were based on the knowledge that panning V(H) CDR **libraries** displayed in a standard pIII phagemid/helper **phage** format against immobilized **multivalent** carbohydrate antigens selects almost solely for mutants with higher yields of soluble product or scFvs that form dimers or higher oligomers even when the linker length is chosen to give monomeric molecules. Construction of scFv **libraries**, in a phagemid vector, with mutations that already provide higher yields and/or short linkers to promote dimeric display greatly reduced these undesired selection pressures. However. the panning of an error-prone **library** of the entire scFv in a short linker format yielded two mutants that existed partially in higher oligomeric forms, indicating that dimeric display did not entirely eliminate the selection pressure problem. In one mutant a Ser75Gly mutation led to the formation of greater amounts of dimeric, trimeric and tetrameric scFv and surface plasmon resonance analysis of these different forms gave quantitative data for the functional affinity of these different scFv forms. Finally, a phage vector was constructed and the original V(H) CDR **library** was transferred to this vector. This display format, in which scFv is displayed on all three to five copies of pIII, seemed to be superior in terms of selection on the basis of binding site affinity and as a display mode for scFvs with low intrinsic affinity. While the use of the phage vector did not lead to the isolation of higher affinity binders from the **library** employed here, it did almost entirely remove the undesired selection pressures in that there was selection for the wild-type sequence. It is suggested that the multivalency of display provided by phage vectors is preferable to any phagemid vector strategy for the de novo isolation of anti-carbohydrate antibodies from phage **libraries**.
CT Check Tags: Human
Amino Acid Sequence
Amino Acid Substitution
Antibodies, Bacterial: GE, genetics
Antibodies, Bacterial: IM, immunology
Antibodies, Bacterial: IP, isolation & purification
Antigen-Antibody Reactions
Bacteriophages
Base Sequence
Genetic Vectors
Immunoglobulin Fragments: GE, genetics
Immunoglobulin Fragments: IM, immunology
*Immunoglobulin Fragments: IP, isolation & purification
Immunoglobulin Variable Region: GE, genetics
Immunoglobulin Variable Region: IM, immunology
*Immunoglobulin Variable Region: IP, isolation & purification
Molecular Sequence Data
***Peptide Library**
Polyisoprenyl Phosphate Sugars: IM, immunology
Polymerase Chain Reaction
Recombinant Fusion Proteins: GE, genetics
Recombinant Fusion Proteins: IM, immunology
Recombinant Fusion Proteins: IP, isolation & purification
Salmonella typhimurium: IM, immunology
Subtraction Technique
Surface Plasmon Resonance
CN 0 (immunoglobulin Fv); 0 (Antibodies, Bacterial); 0 (Genetic Vectors); 0 (Immunoglobulin Fragments); 0 (Immunoglobulin Variable Region); 0 (O-specific polysaccharide, Salmonella); 0 (Peptide **Library**); 0 (Polyisoprenyl Phosphate Sugars); 0 (Recombinant Fusion Proteins)

L7 ANSWER 6 OF 9 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1998:302607 BIOSIS
DN PREV199800302607
TI Selection of new epitopes from monovalent displayed phage octapeptide **library**.
AU Li, Quanxi; Wang, Yan (1); Li, Jing; Wang, Yaming; Xu, Jianjun; Wang, Limin; Dong, Zhiwei
CS (1) Cent. Lab., Navy Gen. Hosp., Beijng 100037 China
SO Chinese Medical Sciences Journal, (March, 1998) Vol. 13, No. 1, pp. 1-8. ISSN: 1001-9294.
DT Article
LA English
AB A **library** of 2 X 107 random octapeptides was constructed by use of phagemid-based monovalent **phage display** system. The randomly synthesized degenerated oligodeoxyribonucleotides (oligos) were fused to the truncated g III (p230-P403). Sequence analysis of 11 randomly chosen clones suggested that the degenerated inserts and its deduced amino acid (as) sequences are randomly distributed. The **library** was used to select binding peptides to the monoclonal antibody (mAb) 9E10, which recognizes a continuous decapeptide epitope of denatured human c-myc protein. After four to five rounds of panning, most of the eluted clones could bind to 9E10. Sequence analysis of the selected positive clones indicated that the binding sequences could fall into two classes, one class (clone 1) shares a consensus motif, ISE X X L, with c-myc decapeptide; and the sequences of the other class are entirely different. The binding of both classes to 9E10 could be specifically inhibited by free c-myc decapeptide. The immunogenicity of the phage peptide was further investigated by construction of **multivalent** displayed **phage** peptides and immunization of animals with or without adjuvant. ELISA and competitive ELISA showed that anti-serum from both mice and rabbit immunized with either clone could bind to the original antigen, c-myc decapeptide. These results denote that in spite of the dissimilarity of the selected peptides with c-myc decapeptide they are capable of inducing similar immune response in vivo, thus actually mimicking the antigen epitope.
CC Genetics and Cytogenetics - Animal *03506
Biochemical Studies - General *10060
Immunology and Immunochemistry - General; Methods *34502
BC Leporidae 86040
Muridae 86375
IT Major Concepts
Immune System (Chemical Coordination and Homeostasis); Molecular Genetics (Biochemistry and Molecular Biophysics)
IT Chemicals & Biochemicals
antigen epitope; c-myc decapeptide; monoclonal antibody 9E10
IT Methods & Equipment
monovalent **phage display**: analytical method
IT Miscellaneous Descriptors
amino acid sequences; immune responses; octapeptide **library**
ORGN Super Taxa
Leporidae: Lagomorpha, Mammalia, Vertebrata, Chordata, Animalia; Muridae: Rodentia, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
mouse (Muridae); rabbit (Leporidae)
ORGN Organism Superterms
Animals; Chordates; Lagomorphs; Mammals; Nonhuman Mammals; Nonhuman Vertebrates; Rodents; Vertebrates

L7 ANSWER 7 OF 9 MEDLINE DUPLICATE 4
AN 96256889 MEDLINE
DN 96256889

TI A **phage display** system for detection of T cell receptor-antigen interactions.
AU Onda T; LaFace D; Baier G; Brunner T; Honma N; Mikayama T; Altman A; Green D R
CS Division of Cellular Immunology, La Jolla Institute for Allergy and Immunology, CA 92037, USA.
NC GM52735 (NIGMS)
SO MOLECULAR IMMUNOLOGY, (1995 Dec) 32 (17-18) 1387-97. Journal code: NG1. ISSN: 0161-5890.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199609
AB The process of T cell recognition involves a complex set of interactions between the various components of the TCR/MHC/peptide trimolecular complex. We have developed a system for exploring the specific binding interactions contributed by the constituent subunits of TCR complexes for components of their ligands. We utilized an M13 **phage display** system, designed for multivalent receptor display, to explore specific binding interactions between various TCR alpha chains and specific antigen in the absence of MHC. The **multivalent** TCR-**phage display** system was sensitive enough to reveal some TCR alpha chains capable of binding directly to antigen with the same fine specificity shown by the MHC-restricted T cells from which the alpha chains were derived. Cross-specificity analysis using two antigen-binding TCR alpha chains derived from T cells with different polypeptide antigen specificities confirmed the fidelity of this binding. In mixtures of antigen-binding and non-binding TCR alpha-displaying phage, specific selection was achieved at a starting frequency of 1/1000, suggesting that this system can be employed for selection and analysis of TCR-displaying phage **libraries**. While the binding specificities exhibited by these TCRs are unusual, they provide a novel perspective from which to study the specific binding interactions that constitute TCR antigen binding.
CT Check Tags: Animal; Support, Non-U.S. Gov't; Support, U.S. Gov't, P.H.S.
Amino Acid Sequence
*Antigen Presentation: GE, genetics
*Bacteriophage M13: GE, genetics
Bacteriophage M13: IM, immunology
Base Sequence
Binding Sites: GE, genetics
Binding Sites: IM, immunology
Epitopes: GE, genetics
*Genetic Vectors: IM, immunology
Helper Viruses: GE, genetics
Helper Viruses: IM, immunology
Mice
Mice, Inbred BALB C
Molecular Sequence Data
Peptides: GE, genetics
Peptides: IM, immunology
*Peptides: ME, metabolism
Receptors, Antigen, T-Cell, alpha-beta: GE, genetics
*Receptors, Antigen, T-Cell, alpha-beta: ME, metabolism
T-Lymphocytes: IM, immunology
CN 0 (Epitopes); 0 (Genetic Vectors); 0 (Peptides); 0 (Receptors, Antigen, T-Cell, alpha-beta)

L7 ANSWER 8 OF 9 MEDLINE DUPLICATE 5
AN 92228829 MEDLINE
DN 92228829

TI In vitro selection and affinity maturation of antibodies from a naive combinatorial immunoglobulin **library**.
AU Gram H; Marconi L A; Barbas C F 3d; Collet T A; Lerner R A; Kang A S
CS Scripps Research Institute, Department of Molecular Biology, La Jolla, CA 92037..
SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1992 Apr 15) 89 (8) 3576-80.
Journal code: PV3. ISSN: 0027-8424.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199207
AB We have used a combinatorial immunoglobulin **library** approach to obtain monoclonal antibodies from nonimmune adult mice, thereby establishing the principles of (i) accessing naive combinatorial antibody **libraries** for predetermined specificities and (ii) increasing the affinity of the selected antibody binding sites by random mutagenesis. A combinatorial Fab **library** expressing immunoglobulin mu and kappa light-chain fragments on the surface of filamentous phage was prepared from bone marrow of nonimmunized, adult BALB/c mice with the **multivalent** display vector pComb8. **Phage** displaying low affinity Fabs (binding constants, 10(4)-10(5) M-1) binding to a progesterone-bovine serum albumin conjugate were isolated from the **library**. Random mutagenesis of the heavy- and light-chain variable regions expressed in the mono-valent **phage display** vector pComb3 was performed by error-prone PCR, and subsequently clones with improved affinity for the hapten conjugate were selected. We demonstrate that antibodies with desirable characteristics from a nonimmune source may be selected and affinity maturation may be achieved by using the twin vectors pComb8 and pComb3, thus opening the route to obtaining specific antibodies from a generic **library** and bypassing immunization.
CT Check Tags: Animal; Comparative Study; Male
Amino Acid Sequence
*Antibodies, Monoclonal: GE, genetics
Base Sequence
*Bone Marrow: IM, immunology
Enzyme-Linked Immunosorbent Assay
***Gene Library**
*Genes, Immunoglobulin
*Immunoglobulin Variable Region: GE, genetics
*Immunoglobulins, kappa-Chain: GE, genetics
*Immunoglobulins, mu-Chain: GE, genetics
*Immunoglobulins, Fab: GE, genetics
Mice
Mice, Inbred BALB C
Molecular Sequence Data
Mutagenesis
Oligodeoxyribonucleotides
Plasmids
Polymerase Chain Reaction
Restriction Mapping
Sequence Homology, Nucleic Acid
CN 0 (Antibodies, Monoclonal); 0 (Immunoglobulin Variable Region); 0 (Immunoglobulins, kappa-Chain); 0 (Immunoglobulins, mu-Chain); 0 (Immunoglobulins, Fab); 0 (Oligodeoxyribonucleotides); 0 (Plasmids)

L7 ANSWER 9 OF 9 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1990:502702 BIOSIS
DN BR39:114698
TI ESTABLISHMENT OF THE GENE **LIBRARY** OF THE **POLYVALENT PHAGE** 812 AND THE PHAGE 80-ALPHA.
AU ROSYPAL S; DOSKAR J; ROSYPALOVA A; ZUROVEC M
CS DEP. GENERAL MOLECULAR BIOL., FAC. SCI., MASARYK UNIVERSITY, KOTLARSKA 2,

611 37 BRNO.
SO Scr. Fac. Sci. Nat. Univ. Purkynianae Brun., (1990) 20 (3), 151-152.
CODEN: SUPBAA. ISSN: 0371-4144.
FS BR; OLD
LA English
CC Biochemical Studies - Nucleic Acids, Purines and Pyrimidines 10062
Biochemical Studies - Proteins, Peptides and Amino Acids 10064
Biophysics - General Biophysical Techniques 10504
Enzymes - Physiological Studies *10808
Physiology and Biochemistry of Bacteria *31000
Genetics of Bacteria and Viruses *31500
Virology - Bacteriophage *33504
BC Bacterial Viruses - Unspecified 02110
Enterobacteriaceae 04810
Micrococcaceae 05510
IT Miscellaneous Descriptors
STAPHYLOCOCCUS-AUREUS ESCHERICHIA-COLI DNA RESTRICTION ENDONUCLEASE ELECTROPHORESIS
RN 9055-11-2 (ENDONUCLEASE)

L9 ANSWER 1 OF 5 MEDLINE DUPLICATE 1
AN 1999144109 MEDLINE
DN 99144109
TI Targeted delivery of **multivalent phage display** vectors into mammalian cells [published erratum appears in Biochim Biophys Acta 1999 Sep 21;1451(2-3):364].
AU Ivanenkov V V; Felici F; Menon A G
CS Department of Molecular Genetics, Biochemistry and Microbiology, University of Cincinnati, College of Medicine 45267, USA.
SO BIOCHIMICA ET BIOPHYSICA ACTA, (1999 Jan 11) 1448 (3) 463-72. Journal code: A0W. ISSN: 0006-3002.
CY Netherlands
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Cancer Journals; Priority Journals
E

12 ANSWER 16 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1996:485065 BIOSIS
DN PREV199699200321
TI In vitro and in vivo characterization of a human anti-c-erbB-2 single-chain Fv isolated from a filamentous phage antibody **library** .
AU Schier, Robert; **Marks, James D. (1)**; Wolf, Ellen J.; Apell, Gerald; Wong, Cindy; McCartney, John E.; Bookman, Michael A.; Huston, James S.; Houston, L. L.; Weiner, Louis M.; Adams, Gregory P.
CS (1) Dep. Anesthesia Pharm. Chem., Univ. California, San Francisco, CA USA
SO Immunotechnology (Amsterdam), (1995) Vol. 1, No. 1, pp. 73-81. ISSN: 1380-2933.
DT Article
LA En

L12 ANSWER 1 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 2000:277648 BIOSIS
DN PREV200000277648
TI High affinity human antibodies to tumor antigens.
AU **Marks, James D. (1)**; Schier, Robert
CS (1) San Francisco, CA USA
ASSIGNEE: The Regents of the University of California, Oakland, CA, USA
PI US 5977322 November 02, 1999
SO Official Gazette of the United States Patent and Trademark Office Patents,
(Nov. 2, 1999) Vol. 1228, No. 1, pp. No pagination. e-file..
ISSN: 0098-1133.
DT Patent
LA English

L12 ANSWER 2 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 2000:278867 BIOSIS
DN PREV200000278867
TI Methods for producing members of specific binding pairs.
AU McCafferty, John (1); Pope, Anthony Richard; Johnson, Kevin Stuart; Hoogenboom, Henricus Renerus Jacobus Mattheus; Griffiths, Andrew David; Jackson, Ronald Henry; Holliger, Kaspar Philipp; **Marks, James David**; Clackson, Timothy Piers; Chiswell, David John; Winter, Gregory Paul; Bonnert, Timothy Peter
CS (1) Sawston UK
ASSIGNEE: Medical Research Council; Cambridge Antibody Technology Limited,
Cambridgeshire, UK
PI US 5969108 October 19, 1999
SO Official Gazette of the United States Patent and Trademark Office Patents,
(Oct. 19, 1999) Vol. 1227, No. 3, pp. No pagination. e-file..
ISSN: 0098-1133.
DT Patent
LA English

L12 ANSWER 3 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1999:322259 BIOSIS
DN PREV199900322259
TI Disruption of anthrax toxin binding with the use of human antibodies and competitive inhibitors.
AU Cirino, Nick M.; Sblattero, Daniele; Allen, David; Peterson, Scott R.; **Marks, James D.**; Jackson, Paul J.; Bradbury, Andrew; Lehnert, Bruce E. (1)
CS (1) Los Alamos National Laboratory, Los Alamos, NM, 87545 USA
SO Infection and Immunity, (June, 1999) Vol. 67, No. 6, pp. 2957-2963.
ISSN: 0019-9567.
DT Article
LA English
SL English

L12 ANSWER 4 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1999:343203 BIOSIS
DN PREV199900343203
TI Synthesis of Rh Fv phage-antibodies using VH and VL germline genes.
AU Hughes-Jones, Nevin C.; Bye, Jacqueline M.; Gorick, Barbara D.; **Marks, James D.**; Ouwehand, Willem H. (1)
CS (1) Division of Transfusion Medicine, Department of Haematology,

University of Cambridge, Long Road, Cambridge, CB2 2PT UK
SO British Journal of Haematology, (June, 1999) Vol. 105, No. 3, pp. 811-816.
ISSN: 0007-1048.
DT Article
LA English
SL English

L12 ANSWER 5 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1999:145729 BIOSIS
DN PREV199900145729
TI Toward selection of internalizing antibodies from phage **libraries**.
AU Becerril, Baltazar; Poul, Marie-Alix; **Marks, James D. (1)**
CS (1) Dep. Anesthesia, Univ. California, San Francisco, Room 3C-38, San Francisco General Hosp., 1001 Potrero Ave., San Francisco, CA 94110 USA
SO Biochemical and Biophysical Research Communications, (Feb. 16, 1999) Vol. 255, No. 2, pp. 386-393.
ISSN: 0006-291X.
DT Article
LA English

L12 ANSWER 6 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1999:269322 BIOSIS
DN PREV199900269322
TI Targeted gene delivery to mammalian cells by filamentous bacteriophage.
AU Poul, Marie-Alix; **Marks, James D. (1)**
CS (1) Departments of Anesthesia and Pharmaceutical Chemistry, University of California San Francisco, San Francisco General Hospital, 1001 Potrero Avenue, Rm. 3C-38, San Francisco, CA, 94110 USA
SO Journal of Molecular Biology, (April 30, 1999) Vol. 288, No. 2, pp. 203-211.
ISSN: 0022-2836.
DT Article
LA English
SL English

L12 ANSWER 7 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1998:296326 BIOSIS
DN PREV199800296326
TI Efficient construction of a large nonimmune phage antibody **library**: The production of high-affinity human single-chain antibodies to protein antigens.
AU Sheets, Michael D. (1); Amersdorfer, Peter; Finnern, Ricarda; Sargent, Peter; Lindqvist, Ericka; Schier, Robert; Hemingsen, Grete; Wong, Cindy; Gerhart, John C.; **Marks, James D.**
CS (1) Dep. Mol. Cell Biol., Univ. California, Berkeley, CA 94720 USA
SO Proceedings of the National Academy of Sciences of the United States of America, (May 26, 1998) Vol. 95, No. 11, pp. 6157-6162.
ISSN: 0027-8424.
DT Article
LA English

L12 ANSWER 8 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1997:439366 BIOSIS
DN PREV199799738569
TI Molecular characterization of murine humoral immune response to botulinum neurotoxin type A binding domain as assessed by using phage antibody **libraries**.
AU Amersdorfer, Peter; Wong, Cindy; Chen, Steven; Smith, Theresa; Deshpande, Sharad; Sheridan, Robert; Finnern, Ricarda; **Marks, James D. (1)**
CS (1) Univ. California San Francisco, San Francisco General Hosp., 1001 Potrero Ave., Room 3C-38, San Francisco, CA 94110 USA
SO Infection and Immunity, (1997) Vol. 65, No. 9, pp. 3743-3752.

ISSN: 0019-9567.
DT Article
LA English

L12 ANSWER 9 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1996:463001 BIOSIS
DN PREV199699185357
TI Phage **libraries**. A new route to clinically useful antibodies.
AU Marks, Cara; **Marks, James D. (1)**
CS (1) Dep. Anesthesia, Rm. 3C-38, San Francisco Gen. Hosp., San Francisco, CA 94110 USA
SO New England Journal of Medicine, (1996) Vol. 335, No. 10, pp. 730-733.
ISSN: 0028-4793.
DT Article
LA English

L12 ANSWER 10 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1997:20285 BIOSIS
DN PREV199799319488
TI Isolation of picomolar affinity anti-c-erbB-2 single-chain Fv by molecular
evolution of the complementarity determining regions in the center of the antibody binding site.
AU Schier, Robert (1); McCall, Adrian; Adams, Gregory P.; Marshall, Keith W.;
Merritt, Hanne; Yim, Michael; Crawford, Robert S.; Weiner, Louis M.; Marks, Cara; **Marks, James D.**
CS (1) Codon Genet. Systems, Nussdorfer Laende 11, 1190 Vienna Austria
SO Journal of Molecular Biology, (1996) Vol. 263, No. 4, pp. 551-567.
ISSN: 0022-2836.
DT Article
LA English

L12 ANSWER 11 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1997:139133 BIOSIS
DN PREV199799438336
TI Engineering antibodies for tumor targeting using **phage display**.
AU Schier, Robert (1); Adams, G.; Marshall, K.; McCall, A.; Weiner, L.; Bookman, M.; **Marks, James D.**
CS (1) Dep. Anesthesia., Univ. California, San Francisco, CA USA
SO Immunotechnology (Amsterdam), (1996) Vol. 2, No. 4, pp. 290-291.
Meeting Info.: 1996 Keystone Meeting on Exploring and Exploiting Antibody and Ig Superfamily Combining Sites Taos, New Mexico, USA February 22-28, 1996
ISSN: 1380-2933.
DT Conference; Abstract
LA English

L12 ANSWER 12 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1997:139109 BIOSIS
DN PREV199799438312
TI Isolation and characterization of human single chain Fv (scFv) against botulinum neurotoxin type A.
AU Amersdorfer, Peter (1); Wong, Cindy (1); Smith, Theresa; **Marks, James D. (1)**
CS (1) Dep. Anesthesia Pharm. Chem., Univ. California, San Francisco, CA 94110 USA
SO Immunotechnology (Amsterdam), (1996) Vol. 2, No. 4, pp. 283.
Meeting Info.: 1996 Keystone Meeting on Exploring and Exploiting Antibody and Ig Superfamily Combining Sites Taos, New Mexico, USA February 22-28, 1996
ISSN: 1380-2933.
DT Conference; Abstract
LA English

L12 ANSWER 13 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1996:187624 BIOSIS
DN PREV199698743753
TI Identification of functional and structural amino-acid residues by parsimonious mutagenesis.
AU Schier, Robert; Balint, Robert F.; McCall, Adrian; Apell, Gerald; Larrick, James W.; **Marks, James D. (1)**
CS (1) Dep. Anesthesia, Room 3C-38, San Francisco Gen. Hosp., 1001 Potrero, San Francisco, CA 94110 USA
SO Gene (Amsterdam), (1996) Vol. 169, No. 2, pp. 147-155. ISSN: 0378-1119.
DT Article
LA English

L12 ANSWER 14 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1997:157307 BIOSIS
DN PREV199799456510
TI Efficient in vitro affinity maturation of phage antibodies using BIAcore guided selections.
AU Schier, Robert; **Marks, James D. (1)**
CS (1) Dep. Anesthesia, Room 3C-38, San Francisco Gen. Hosp., 1001 Potrero, San Francisco, CA 94110 USA
SO Human Antibodies and Hybridomas, (1996) Vol. 7, No. 3, pp. 97-105. ISSN: 0956-960X.
DT Article
LA English

L12 ANSWER 15 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1996:110464 BIOSIS
DN PREV199698682599
TI Isolation of high-affinity monomeric human anti-c-erbB-2 single chain Fv using affinity-driven selection.
AU Schier, Robert; Bye, Jacqueline; Apell, Gerald; McCall, Adrian; Adams, Gregory P.; Malmqvist, Magnus; Weiner, Louis M.; **Marks, James D. (1)**
CS (1) Dep. Anesthesia Pharm. Chem., Univ. California, San Francisco, Rm 3C-38 San Francisco Gen. Hosp., 1001 Potrero, San Francisco, CA 94110 USA
SO Journal of Molecular Biology, (1996) Vol. 255, No. 1, pp. 28-43. ISSN: 0022-2836.
DT Article
LA English

L12 ANSWER 16 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1996:485065 BIOSIS
DN PREV199699200321
TI In vitro and in vivo characterization of a human anti-c-erbB-2 single-chain Fv isolated from a filamentous phage antibody **library**.
AU Schier, Robert; **Marks, James D. (1)**; Wolf, Ellen J.; Apell, Gerald; Wong, Cindy; McCartney, John E.; Bookman, Michael A.; Huston, James S.; Houston, L. L.; Weiner, Louis M.; Adams, Gregory P.
CS (1) Dep. Anesthesia Pharm. Chem., Univ. California, San Francisco, CA USA
SO Immunotechnology (Amsterdam), (1995) Vol. 1, No. 1, pp. 73-81. ISSN: 1380-2933.
DT Article
LA English

L12 ANSWER 17 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1993:186444 BIOSIS
DN PREV199395096894
TI Human anti-self antibodies with high specificity from **phage display libraries**.
AU Griffiths, Andrew D.; Malmqvist, Magnus; **Marks, James D.**; Bye,

Jacqueline M.; Embleton, M. J.; McCafferty, John; Baier, Michael; Holliger, K. Philipp; Gorick, Barbara D.; et al.
CS Inq: G. Winter, MRC Centre Protein Eng., Unit, MRC Center, Hills Road, Cambridge CB2 2QH UK
SO EMBO (European Molecular Biology Organization) Journal, (1993) Vol. 12, No. 2, pp. 725-734.
ISSN: 0261-4189.
DT Article
LA English

L12 ANSWER 18 OF 18 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1993:28132 BIOSIS
DN PREV199395016332
TI The repertoire of human germline V-H sequences reveals about fifty groups of V-H segments with different hypervariable loops.
AU Tomlinson, Ian M.; Walter, Gerald; **Marks, James D.**; Llewelyn, Meirion B.; Winter, Greg (1)
CS (1) MRC Centre Protein Engineering, Hills Road, Cambridge CB2 2QH UK
SO Journal of Molecular Biology, (1992) Vol. 227, No. 3, pp. 776-798.
ISSN: 0022-2836.
DT Article
LA English

L9 ANSWER 1 OF 7 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 2000:470933 SCISEARCH
GA The Genuine Article (R) Number: 326AT
TI Selection of recombinant antibodies specific for pathogenic Streptococcus suis by subtractive phage display
AU deGreeff A (Reprint); vanAlphen L; Smith H E
CS INST ANIM SCI & HLTH, DEPT BACTERIOL, POB 65, NL-8200 AB LELYSTAD, NETHERLANDS (Reprint); UNIV AMSTERDAM, ACAD MED CTR, DEPT MED MICROBIOL, NL-1105 AZ AMSTERDAM, NETHERLANDS; NATL INST PUBL HLTH & ENVIRONM, RIVM, LAB VACCINE DEV & IMMUNE MECHANISMS, NL-3720 BA BILTHOVEN, NETHERLANDS
CYA NETHERLANDS
SO INFECTION AND IMMUNITY, (JUL 2000) Vol. 68, No. 7, pp. 3949-3955.
Publisher: AMER SOC MICROBIOLOGY, 1752 N ST NW, WASHINGTON, DC 20036-2904.
ISSN: 0019-9567.
DT Article; Journal
FS LIFE
LA English
REC Reference Count: 30
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L9 ANSWER 2 OF 7 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1999:308541 BIOSIS
DN PREV199900308541
TI Identification of a human anti-CD55 single-chain Fv by subtractive panning
of a phage library using tumor and nontumor cell lines.
AU Ridgway, John B.B.; Ng, Eric; Kern, Jeffrey A.; Lee, James; Brush, Jennifer; Goddard, Audrey; Carter, Paul (1)
CS (1) Genentech Inc., 1 DNA Way, South San Francisco, CA, 94080 USA
SO Cancer Research, (June 1, 1999) Vol. 59, No. 11, pp. 2718-2723.
ISSN: 0008-5472.
DT Article
LA English
SL English

L9 ANSWER 3 OF 7 MEDLINE DUPLICATE 1
AN 1999398409 MEDLINE
DN 99398409
TI Dissecting the human peripheral B-cell compartment with phage display-derived antibodies.
AU van der Vuurst de Vries A; Logtenberg T
CS Department of Immunology, University Hospital Utrecht, The Netherlands.
SO IMMUNOLOGY, (1999 Sep) 98 (1) 55-62.
Journal code: GH7. ISSN: 0019-2805.
CY ENGLAND: United Kingdom
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 200001
EW 20000104

L9 ANSWER 4 OF 7 MEDLINE DUPLICATE 2
AN 1999095686 MEDLINE
DN 99095686
TI A new **subtraction** technique for molecular cloning of rare antiviral **antibody** specificities from **phage** display **libraries**.

AU Burioni R; Plaisant P; Bugli F; Solforosi L; Delli Carri V; Varaldo P E; Fadda G
CS Istituto di Microbiologia, Facolt`a di Medicina, Universit`a Cattolica del Sacro Cuore, Roma, Italy.
SO RESEARCH IN VIROLOGY, (1998 Sep-Oct) 149 (5) 327-30.
Journal code: R7E. ISSN: 0923-2516.
CY France
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199906
EW 19990603

L9 ANSWER 5 OF 7 MEDLINE DUPLICATE 3
AN 97268669 MEDLINE
DN 97268669
TI Subtractive isolation of phage-displayed single-chain antibodies to thymic stromal cells by using intact thymic fragments.
AU Van Ewijk W; de Kruif J; Germeraad W T; Berendes P; Ropke C; Platenburg P P; Logtenberg T
CS Department of Immunology, Erasmus University of Rotterdam, The Netherlands.
SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1997 Apr 15) 94 (8) 3903-8.
Journal code: PV3. ISSN: 0027-8424.
CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199707
EW 19970704

L9 ANSWER 6 OF 7 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 96:608087 SCISEARCH
GA The Genuine Article (R) Number: VB545
TI A MODEL PHAGE DISPLAY SUBTRACTION METHOD WITH POTENTIAL FOR ANALYSIS OF DIFFERENTIAL GENE-EXPRESSION
AU STAUSBOLGRON B (Reprint); WIND T; KJAER S; KAHNS L; HANSEN N J V; KRISTENSEN P; CLARK B F C
CS AARHUS UNIV, INST MOL & STRUCT BIOL, LANGELANDSGADE 140, DK-8000 AARHUS C, DENMARK (Reprint); MARSELISBORG HOSP, DEPT DERMATOL, DK-8000 AARHUS C, DENMARK
CYA DENMARK
SO FEBS LETTERS, (05 AUG 1996) Vol. 391, No. 1-2, pp. 71-75.
ISSN: 0014-5793.
DT Article; Journal
FS LIFE
LA ENGLISH
REC Reference Count: 33
ABSTRACT IS AVAILABLE IN THE ALL AND IALL FORMATS

L9 ANSWER 7 OF 7 MEDLINE DUPLICATE 4
AN 95249587 MEDLINE
DN 95249587
TI Rapid selection of cell subpopulation-specific human monoclonal antibodies from a synthetic phage antibody library.
AU de Kruif J; Terstappen L; Boel E; Logtenberg T
CS Department of Immunology, Utrecht University, The Netherlands.
SO PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA, (1995 Apr 25) 92 (9) 3938-42.
Journal code: PV3. ISSN: 0027-8424.

CY United States
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals; Cancer Journals
EM 199508

L9 ANSWER 4 OF 7 MEDLINE DUPLICATE 2
AN 1999095686 MEDLINE
DN 99095686
TI A new **subtraction** technique for molecular cloning of rare antiviral **antibody** specificities from **phage** display **libraries**.
AU Burioni R; Plaisant P; Bugli F; Solforosi L; Delli Carri V; Varaldo P E; Fadda G
CS Istituto di Microbiologia, Facolt`a di Medicina, Universit`a Cattolica del Sacro Cuore, Roma, Italy.
SO RESEARCH IN VIROLOGY, (1998 Sep-Oct) 149 (5) 327-30. Journal code: R7E. ISSN: 0923-2516.
CY France
DT Journal; Article; (JOURNAL ARTICLE)
LA English
FS Priority Journals
EM 199906
EW 19990603
AB The preparation of random combinatorial libraries exposed on the surface of phage provides a route for the selection of diverse high affinity human monoclonal antibodies. However, in particular settings, the isolation of genes coding for a rare antibody can be elusive because some epitopes are predominant and because, in the case of impure antigens, the protein or any compound of interest can be present in relatively minimal amount. In this paper, we describe the successful utilization of a new strategy of "preadsorption" panning that allowed us to clone a rare human monoclonal antibody fragment and to access a different antibody repertoire. The procedure is easy, fast, inexpensive, can be used together with other panning techniques and can be particularly useful in cloning antibodies against rare or unknown determinants.
CT Check Tags: Human; Support, Non-U.S. Gov't
Antibodies, Monoclonal: GE, genetics
*Antibodies, Monoclonal: IM, immunology
*Antibody Specificity
Antigens, Viral: IM, immunology
Bacteriophages
Base Sequence
*Cloning, Molecular
Enzyme-Linked Immunosorbent Assay
Fluorescent Antibody Technique, Indirect
Herpes Simplex: VI, virology
*Herpesvirus 1, Human: IM, immunology
*Herpesvirus 2, Human: IM, immunology
Immunoglobulin Variable Region: GE, genetics
Immunoglobulins, Fab: GE, genetics
*Immunoglobulins, Fab: IM, immunology
Immunoglobulins, Heavy-Chain: GE, genetics
Immunoglobulins, Heavy-Chain: IM, immunology
Middle Age
Molecular Sequence Data
Peptide Library
CN 0 (Antibodies, Monoclonal); 0 (Antigens, Viral); 0 (Immunoglobulin Variable Region); 0 (Immunoglobulins, Fab); 0 (Immunoglobulins, Heavy-Chain); 0 (Peptide Library)

L9 ANSWER 2 OF 7 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1999:308541 BIOSIS
DN PREV199900308541
TI Identification of a human anti-CD55 single-chain Fv by subtractive panning
of a phage library using tumor and nontumor cell lines.
AU Ridgway, John B.B.; Ng, Eric; Kern, Jeffrey A.; Lee, James; Brush, Jennifer; Goddard, Audrey; Carter, Paul (1)
CS (1) Genentech Inc., 1 DNA Way, South San Francisco, CA, 94080 USA
SO Cancer Research, (June 1, 1999) Vol. 59, No. 11, pp. 2718-2723. ISSN: 0008-5472.
DT Article
LA English
SL English
AB A large naive human single-chain (sc) Fv phage library was used to search for tumor-associated antigens by panning with a lung adenocarcinoma cell line, 1264, and counter-selecting with a nontumor bronchial epithelial cell line, BEAS-2B. After three rounds of subtractive panning, 239 of 673 clones analyzed bound selectively to 1264 tumor cells in a phage ELISA. Diversity analysis of these tumor-selective clones by BstNI finger-printing and nucleotide sequencing revealed 14 distinct scFv fragments. Four clones bound selectively to 1264 over BEAS-2B cells when analyzed by a more discriminating flow cytometric assay using scFv. Moreover, these clones showed only limited cross-reactivity to several primary human cell lines. One clone, LU30, also cross-reacted strongly with the lung adenocarcinoma line, A549. The LU30 antigen was identified as decay-accelerating factor (CD55) by expression cloning from a 1264 cDNA
library. The mean number of decay-accelerating factor molecules on the surface of 1264 and BEAS cells used for panning and counter-selection was estimated as 75,000 +- 5,000 and 13,000 +- 10,000, respectively. Thus, phage library panning combined with expression cloning permits identification of antibodies and their cognate antigens for proteins that are differentially expressed on the surface of distinct cell populations.
CC Neoplasms and Neoplastic Agents - Immunology *24003
Cytology and Cytochemistry - Human *02508
Metabolism - Carbohydrates *13004
Neoplasms and Neoplastic Agents - Neoplastic Cell Lines *24005
Immunology and Immunochemistry - Immunopathology, Tissue Immunology *34508
Metabolism - Proteins, Peptides and Amino Acids *13012
Respiratory System - Pathology *16006
Biochemical Methods - Proteins, Peptides and Amino Acids *10054
Tissue Culture, Apparatus, Methods and Media *32500
Virology - Bacteriophage *33504
Genetics of Bacteria and Viruses *31500
Biochemical Methods - Carbohydrates *10058
Respiratory System - Physiology and Biochemistry *16004
Biochemical Studies - Proteins, Peptides and Amino Acids *10064
Biochemical Studies - Carbohydrates *10068
Biophysics - Molecular Properties and Macromolecules *10506
BC Hominidae 86215
IT Major Concepts
Molecular Genetics (Biochemistry and Molecular Biophysics); Tumor Biology
IT Chemicals & Biochemicals
anti-CD-55 decay-accelerating factor **antibody**: identification, single chain Fv **phage library**

subtractive panning, tumor cell expression
ORGN Super Taxa
Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia
ORGN Organism Name
BEAS-2B cell line (Hominidae): human nontumor bronchial epithelial cell
line; 1264 cell line (Hominidae): human lung adenocarcinoma cell line
ORGN Organism Superterms
Animals; Chordates; Humans; Mammals; Primates; Vertebrates
RN 99085-47-9 (DECAY-ACCELERATING FACTOR)

L20 ANSWER 6 OF 7 BIOSIS COPYRIGHT 2000 BIOSIS
AN 1999:269322 BIOSIS
DN PREV199900269322
TI Targeted gene delivery to mammalian cells by filamentous bacteriophage.
AU **Poul, Marie-Alix**; Marks, James D. (1)
CS (1) Departments of Anesthesia and Pharmaceutical Chemistry, University of California San Francisco, San Francisco General Hospital, 1001 Potrero Avenue, Rm. 3C-38, San Francisco, CA, 94110 USA
SO Journal of Molecular Biology, (April 30, 1999) Vol. 288, No. 2, pp. 203-211.
ISSN: 0022-2836.
DT Article
LA English
SL English
AB We report that prokaryotic viruses can be re-engineered to infect eukaryotic cells resulting in expression of a reporter gene inserted into the bacteriophage genome. Phage capable of binding mammalian cells expressing the growth factor receptor ErbB2 and undergoing receptor-mediated endocytosis were isolated by selection of a **phage antibody library** on breast tumor cells and recovery of infectious phage from within the cell. As determined by immunofluorescence, F5 phage were efficiently endocytosed into 100% of ErbB2 expressing SKBR3 cells. To achieve reporter gene expression, F5 phage were engineered to package the green fluorescent protein (GFP) reporter gene driven by the CMV promoter. These phage when applied to cells underwent ErbB2-mediated endocytosis leading to GFP expression. GFP expression occurred only in cells overexpressing ErbB2, was dose-dependent reaching, 4% of cells after 60 hours and was detected with phage titers as low as 2.0 X 107 cfu/ml (500 phage/cell). The results demonstrate that bacterial viruses displaying the appropriate antibody can bind to mammalian receptors and utilize the endocytic pathway to infect eukaryotic cells, resulting in expression of a reporter gene inserted into the viral genome. This represents a novel method to discover targeting molecules capable of delivering a gene intracellularly into the correct trafficking pathway for gene expression by directly screening phage antibodies. This should significantly facilitate the identification of appropriate targets and targeting molecules for gene therapy or other applications where delivery into the cytosol is required. This approach can be adapted to directly select, rather than screen, phage antibodies for targeted gene expression. The results also demonstrate the potential of phage antibodies as an in vitro or in vivo targeted gene delivery vehicle.
CC Genetics and Cytogenetics - Human *03508
Microscopy Techniques - General and Special Techniques *01052
Genetics of Bacteria and Viruses *31500
Cytology and Cytochemistry - Human *02508
BC Herpesviridae 02612
Bacterial Viruses - General 02700
Hominidae 86215
IT Major Concepts
Cell Biology; Methods and Techniques; Molecular Genetics (Biochemistry and Molecular Biophysics)
IT Chemicals & Biochemicals
ErbB2
IT Methods & Equipment

cell culture: cell culture method, cell culture techniques; immunofluorescence: Detection/Labeling Techniques, detection method; transfection: gene expression/vector techniques, genetic method; FACS [fluorescence-activated cell sorting]: cell isolation method, flow cytometry: CT; Zeiss Axioskop fluorescent microscope: equipment

ORGN Super Taxa

Bacterial Viruses: Viruses, Microorganisms; Herpesviridae: Animal Viruses, Viruses, Microorganisms; Hominidae: Primates, Mammalia, Vertebrata, Chordata, Animalia

ORGN Organism Name

bacteriophage F5 (Bacterial Viruses); CMV [cytomegalovirus] (Herpesviridae); MCF7 cell line (Hominidae); SKBR3 cell line (Hominidae)

ORGN Organism Superterms

Animal Viruses; Animals; Bacterial Viruses; Chordates; Humans; Mammals;

Microorganisms; Primates; Vertebrates; Viruses

L20 ANSWER 3 OF 7 SCISEARCH COPYRIGHT 2000 ISI (R)
AN 1999:964721 SCISEARCH
GA The Genuine Article (R) Number: 260JL
TI Targeting of breast tumors with scFv **antibodies** selected for internalization from a **phage** display **library**.
AU Nielsen U B (Reprint); **Poul M A**; Pickering E M; Kirpotin D; Shalaby R; Hong K; Park J W; Papahadjopoulos D; Benz C C; Marks J D
CS GARDEN STATE CANC CTR, BELLEVILLE, NJ
CYA USA
SO CLINICAL CANCER RESEARCH, (NOV 1999) Vol. 5, Supp. [S], pp. 92-92.
Publisher: AMER ASSOC CANCER RESEARCH, PO BOX 11806, BIRMINGHAM, AL 35202.
ISSN: 1078-0432.
DT Conference; Journal
FS CLIN
LA English
REC Reference Count: 0
C